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EXAMINER	
NGUYEN, LEON VIET Q	

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2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/823,196	KUCHI ET AL.	
	Examiner	Art Unit	
	LEON-VIET Q. NGUYEN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,13,14,18,19,25-39,41-58,60,61 and 66-71* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,13,14,18,19,25-39,41-58,60,61 and 66-71* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/5/09 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 18, 19, and 42 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 13, 14, 18, 19, 29-33, 36, 38, 41-43, 48-52, 55, 57, 60, 61 and 66-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US20020015437) in view of Zhang et al ("Reduced-State MIMO sequence estimation for EDGE systems" Signals, Systems and Computers, 2002.**

Conference Record of the Thirty-Sixth Asilomar Conference, 3-6 Nov. 2002, Volume 1 page(s): 541- 545) and Olsson et al (US20050111596).

Re claim 1, Li teaches a method comprising:

receiving a composite wireless communication signal (¶0077) by a receiver (fig. 3);

splitting a corresponding complex composite base band received signal into an inphase domain and quadrature domain portion (fig. 6, the signal is divided into I and Q portions); and

performing, on the split corresponding complex base band received signal (signals I and Q in fig. 6), joint signal detection separately in inphase domain and quadrature domain (fig. 6, ¶0034. Joint detection is performed on the I and Q signals separately), where the joint signal detection operates to suppress interference from the interfering signal (although not explicitly taught, interference suppression is a well known feature of joint detection).

Li fails to teach where the joint signal detection comprises performing pre-filtering ad reduced state sequence estimation separately on the inphase domain portion and the quadrature domain portion. However Zhang teaches where the joint signal detection (fig. 1) comprises performing pre-filtering (page 542 left side first paragraph and right side first paragraph) and reduced state sequence estimation (page 542 right side first paragraph, JRSSE in fig. 1). Zhang does not explicitly teach that the joint detection is performed on inphase and quadrature symbols. However Zhang does

teach that the system is an EDGE system (page 541 right side last paragraph). It is well know that EDGE signals comprise an I and Q portion. It would be obvious to perform the pre-filtering and estimation on both I and Q portions of the received signal.

Therefore taking the combined teachings of Li and Zhang as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of Zhang into the method of Li. The motivation to combine Zhang and Li would be to provide near-optimal performance at very low complexity (page 541 right side first paragraph of Zhang).

Li also fails to teach where the composite wireless communication signal comprises a desired signal and an interfering signal. However Olsson teaches receiving a signal where the composite wireless communication signal (fig. 14) comprises a desired signal and an interfering signal (¶0028).

Therefore taking the combined teachings of Li and Olsson as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of Olsson into the method of Li. The motivation to combine Li and Olsson would be to eliminate the degradation in 8PSK-modulated interference and give a large gain over a conventional receiver (¶0063 of Olsson).

Re claim 13, the modified invention of Li teaches a system in which said base station transmits two transmission signals on the same channel (¶0034 and ¶0063 of

Olsson, transmitting a desired GMSK-modulated signal and an 8PSK-modulated signal which results in co-channel interference). It is well known in the art that co-channel interference is crosstalk from two different radio transmitters reusing the same frequency channel.

Re claim 14, the modified invention of Li teaches a system in which said two transmissions signals comprise two GMSK signals (fig. 13 of Olsson, ¶0027 of Olsson), two 8PSK signals or one GMSK and one 8PSK signal.

Re claim 18, the claimed limitations recited have been analyzed and rejected with respect to claim 1. It is well known in the art that MIMO systems (abstract of Zhang) utilize spatially separated antennas.

Re claim 19, the claimed limitations recited have been analyzed and rejected with respect to claim 1.

Re claim 29, the modified invention of Li teaches a method where joint pre-filtering comprises using a set of feed forward weights (page 542, right side, first

paragraph of Zhang, equation 6 of Zhang. W^H is a matrix comprising pre-filter weights) to minimize an error term (page 542, right side, first paragraph of Zhang, equation 6 of Zhang) that includes a MIMO feedback filter (page 542, right side, first paragraph of Zhang, equation 6 of Zhang. B^H is a matrix comprising feed back filter weights), wherein a feed forward filter separately filters the inphase domain portion and the quadrature domain portion (it is well known that a filter would filter the imaginary and real part of an 8PSK modulated signal).

Re claim 30, the modified invention of Li teaches a method where joint pre-filtering comprises optimizing filter coefficients according to a minimum mean square error (MMSE) criterion (page 542, right side, first paragraph of Zhang, equation 7 of Zhang).

Re claim 31, the modified invention of Li teaches a method where reduced state sequence estimation comprises use of a reduced state soft output sequence estimation (JRSSE in fig. 1 of Zhang) that employs a branch metric comprised of inphase domain and quadrature domain components of the corresponding complex composite base band received signal (page 541, left side, second paragraph of Zhang. The system is used in an EDGE system with 8PSK modulation. It is well known in the art that 8-PSK modulated signals are composite baseband signals comprising an in-phase component,

or real, and a quadrature component, or imaginary. Since the composite signal comprises of I and Q components, it is interpreted that the I-Q symbol streams of the composite signal are detected).

Re claim 32, the modified invention of Li teaches a method where said steps of receiving, splitting, and performing are performed in an 8PSK blind I-Q interference suppression receiver (¶0042-¶0043 of Olsson, the blind modulation detection of a desired signal. Also in an EDGE system, signals of either GMSK or 8PSK modulation are present) when a GMSK interferer is present (¶0043 of Olsson, an interferer is GMSK-modulated).

Re claim 33, the modified invention of Zhang teaches where said steps of receiving, splitting, and performing are performed in GMSK-8PSK or 8PSK-GMSK (fig. 14 of Olsson, ¶0028 of Olsson. The desired signal is GMSK modulated and the interferer is 8PSK modulated) minimum mean square error (MMSE) joint detection receiver (abstract of Zhang).

Re claim 36, the modified invention of Li teaches a method further comprising sequentially estimating desired and dominant interfering signal channel impulse

responses (page 542, right side, first paragraph of Zhang. It would be obvious to one of ordinary skill in the art that the impulse response be estimated before it is shortened and reshaped. Furthermore it is well known in the art that in joint equalization systems, data and interference are both detected), where channel estimation blindly identifies a dominant interferer modulation type (¶0043-¶0044 of Olsson) and its training sequence (¶0042 of Olsson).

Re claim 38, the modified invention of Zhang teaches a method where identifying the dominant interferer modulation type and training sequence comprises searching through known training sequences (¶0042 of Olsson, the position and content of the training sequence is well known. Furthermore it is well known in the art that the training sequence incoming of an incoming signal is compared to known training sequences to achieve synchronization), and analyzing residual signals to identify a type of dominant interference (¶0044 of Olsson, decision mechanism 18 in fig. 7).

Re claim 41, the modified invention of Li teaches a method further comprising detecting (¶0043 of Olsson) whether operation of the device is in a first mode in which the interfering signal is to be discarded (fig. 14 and ¶0028 of Olsson) or in a second mode in which the desired signal and the interfering signal are to be processed as data (fig. 13 and ¶0027 of Olsson, in GMSK-GMSK modulation schemes both signals are

processed as data), where in the first mode, the interfering signal is to be discarded (¶0063 of Olsson, the 8PSK-modulated interference is eliminated).

Re claim 42, the claimed limitations recited have been analyzed and rejected with respect to claim 1. Li teaches the device as taught by the method.

Re claim 43, the modified invention of Li teaches a device where said receiver is coupled to a plurality of receive antennas (fig. 1 of Zhang, receive antennas 1 to N).

Re claim 48, the claimed limitations recited have been analyzed and rejected with respect to claim 29.

Re claim 49, the claimed limitations recited have been analyzed and rejected with respect to claim 30.

Re claim 50, the claimed limitations recited have been analyzed and rejected with respect to claim 31.

Re claim 51, the claimed limitations recited have been analyzed and rejected with respect to claim 32.

Re claim 52, the claimed limitations recited have been analyzed and rejected with respect to claim 33.

Re claim 55, the claimed limitations recited have been analyzed and rejected with respect to claim 36.

Re claim 57, the claimed limitations recited have been analyzed and rejected with respect to claim 38.

Re claim 60, the claimed limitations recited have been analyzed and rejected with respect to claim 41.

Re claim 61, the modified invention of Li teaches a system in which two transmission signals are transmitted by the same base station using two antennas or are transmitted by a plurality of base stations each using one antenna (fig. 15 of Olsson).

Re claim 66, the modified invention of Li teaches a device where the composite wireless communication signal is received by the receiver (fig. 1 of Zhang) from each of at least two spatially separated transmit antennas associated with at least one transmitter or from at least two transmitters (abstract of Zhang, it is well known in the art that in MIMO systems antenna diversity is used. Antenna diversity uses multiple spatially separated antennas).

Re claim 67, the modified invention of Li teaches where the receiver receives desired information from each of the at least two spatially separated transmit antennas (abstract of Zhang, this is a well known feature of MIMO systems).

Re claim 68 the claimed limitations recited have been analyzed and rejected with respect to claim 41.

Re claim 69, the modified invention of Li teaches a device where the composite wireless communication signal comprises two signals that are received on a same channel and where the two signals comprise two GMSK signals (fig. 13 of Olsson, ¶0027 of Olsson), two 8PSK signals or one GMSK signal and one 8PSK signal.

Re claim 70, the modified invention of Li teaches a device where the processor is further configured to estimate channel parameters of the interfering signal by calculating channel parameters for all combinations of a desired signal and of said interfering signal (¶0043 of Olsson) and selecting the channel parameters that meet a criterion (¶0044 of Olsson).

Re claim 71, the modified invention of Li teaches a device where the receiver is further configured to receive channel parameters of an interfering signal (¶0043 of Olsson).

5. Claims 25-28, 34, 35, 44-47, 53, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US20020015437), Zhang et al ("Reduced-State MIMO sequence estimation for EDGE systems" Signals, Systems and Computers, 2002. Conference Record of the Thirty-Sixth Asilomar Conference, 3-6 Nov. 2002,

Volume 1 page(s): 541- 545) and Olsson et al (US20050111596) in view of Onggosanusi et al (US20040192215).

Re claim 25, the modified invention of Li teaches a method where the corresponding complex composite base band received signal is comprised of real modulation signals, complex modulation signals or a combination of real and complex modulation signals (fig. 6 of Li, the I signal is the real portion and the Q signal is the imaginary portion) but fails to teach where the real modulation signal is a GMSK signal, and where receiving includes rotating the received signals in complex space such that the GMSK signal is binary modulated.

However Onggosanusi teaches where the real modulation signal is a GMSK signal (¶0039-¶0040, ¶0045), and where receiving includes rotating the received signals in complex space (block 510 in fig. 5, ¶0044) such that the GMSK signal is binary modulated (¶0040-¶0043. a_k is modulated using binary phase shift keying).

Therefore taking the modified teachings of Li, Zhang and Olsson with Onggosanusi as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of Onggosanusi into the method of Li, Zhang and Olsson. The motivation to combine Onggosanusi, Li, Olsson and Zhang would be to provide an additional degree of freedom to assist in interference cancellation (¶0042 of Onggosanusi).

Re claim 26, the modified invention of Li fails to teach a method where the corresponding complex composite base band received signal comprises at least one

GMSK signal, the method further comprising de-rotating the corresponding complex composite base band received signal with a factor $e^{-j\Phi k}$ such that the at least one GMSK signal is forced to be binary modulated.

However Onggosanusi teaches where the corresponding complex composite base band received signal comprises at least one GMSK signal (¶0039-¶0040, ¶0045), further comprising de-rotating the corresponding complex composite base band received signal with a factor $e^{-j\Phi k}$ (¶0044. $-j^{m+1}$ is equivalent to $e^{-j\Phi k}$) such that the at least one GMSK signal is forced to be binary modulated.

Therefore taking the modified teachings of Li, Zhang and Olsson with Onggosanusi as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of Onggosanusi into the method of Li, Zhang and Olsson. The motivation to combine Onggosanusi, Li, Olsson and Zhang would be to provide an additional degree of freedom to assist in interference cancellation (¶0042 of Onggosanusi).

Re claim 27, the modified invention of Li teaches a method where splitting the corresponding complex composite base band received signal comprises splitting the I and Q parts of the de-rotated corresponding complex composite base band received signal (block 515 in fig. 5 of Onggosanusi, ¶0044 of Onggosanusi).

Re claim 28, the modified invention of Li teaches a method further comprising de-rotating the corresponding complex composite base band received signal (block 510 in

fig. 5 of Onggosanusi), where de-rotating and splitting (block 515 in fig. 5 of Onggosanusi) yield modulation formats comprising binary, inphase domain and quadrature domain data streams (¶0042 and equation (1) of Onggosanusi).

Therefore taking the modified teachings of Li, Zhang and Olsson with Onggosanusi as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of Onggosanusi into the method of Li, Zhang and Olsson. The motivation to combine Onggosanusi, Li, Olsson and Zhang would be to provide an additional degree of freedom to assist in interference cancellation (¶0042 of Onggosanusi).

Re claim 34, the modified invention of Li teaches a method where said steps of receiving, splitting, and performing are performed in an I-Q MIMO minimum mean square error (MMSE) receiver (fig. 1 of Zhang) that jointly detects two 8PSK signals (¶0042 of Olsson, Olsson suggests an EDGE system which receives 8PSK-modulated signals and no GMSK signal. One of ordinary skill in the art would have found it obvious to received two 8PSK signals) and rejects residual interference (the feed-forward and feedback filters in fig. 1 of Zhang). However Li fails to teach jointly detecting at least two 8PSK signals and rejecting GMSK interference using I-Q whitening.

Onggosanusi teaches using whitening to reject residual interference (block 525 in fig. 5, ¶0063).

Therefore taking the modified teachings of Li, Zhang and Olsson with Onggosanusi as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of Onggosanusi into the method of Li, Zhang and Olsson. The motivation to combine Onggosanusi, Li, Olsson and Zhang would be to reduce the coloring of the interference signal, which can severely impact performance (¶0063 of Onggosanusi).

Re claim 35, the modified invention of Li teaches a method where said steps of receiving, splitting, and performing are performed in an I-Q MIMO minimum mean square error (MMSE) receiver (fig. 1 of Zhang) that jointly detects at least two GMSK signals (¶0027 of Olsson, fig. 13 of Olsson) and rejects residual interference using I-Q whitening (the feed-forward and feedback filters in fig. 1 of Zhang). However Zhang fails to teach jointly detecting at least two GMSK signals and rejecting GMSK and 8PSK interference using I-Q whitening.

Onggosanusi teaches using whitening to reject residual interference (block 525 in fig. 5, ¶0063).

Therefore taking the modified teachings of Li, Zhang and Olsson with Onggosanusi as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of Onggosanusi into the method of Li, Zhang and Olsson. The motivation to combine Onggosanusi, Li, Olsson and Zhang would be to reduce the coloring of the interference signal, which can severely impact performance (¶0063 of Onggosanusi).

Re claim 44, the claimed limitations recited have been analyzed and rejected with respect to claim 25.

Re claim 45, the claimed limitations recited have been analyzed and rejected with respect to claim 26.

Re claim 46, the claimed limitations recited have been analyzed and rejected with respect to claim 27.

Re claim 47, the claimed limitations recited have been analyzed and rejected with respect to claim 28.

Re claim 53, the claimed limitations recited have been analyzed and rejected with respect to claim 34.

Re claim 54, the claimed limitations recited have been analyzed and rejected with respect to claim 35.

6. **Claims 37 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US20020015437), Zhang et al ("Reduced-State MIMO sequence estimation for EDGE systems" Signals, Systems and Computers, 2002. Conference Record of the Thirty-Sixth Asilomar Conference, 3-6 Nov. 2002, Volume 1 page(s): 541- 545) and Olsson et al (US20050111596) in view of Hafeez et al ("Interference cancellation for EDGE via two-user joint demodulation", Vehicular Technology Conference, 2003. VTC 2003-Fall. 2003 IEEE 58th, Publication Date: 6-9 Oct. 2003, Volume: 2, On page(s): 1025- 1029).**

Re claim 37, the modified invention of Li teaches a method wherein modulation identification comprises use of $e^{j\pi k/2}$, $e^{j3\pi k/8}$ constellation rotations associated with GMSK and 8PSK modulations (¶0043 of Olsson) but fails to teach where training sequence identification comprises use of an estimation metric over a plurality of possible interference training sequence pairs.

Hafeez teaches where training sequence identification comprises use of an estimation metric over a plurality of possible interference training sequence pairs (page 1027, left side, last paragraph – page 1027 right side first paragraph. The channel estimation error taps are interpreted to be the estimation metric).

Therefore taking the modified teachings of Li, Zhang and Olsson with Hafeez as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of Hafeez into the method of Li, Zhang and Olsson. The motivation to combine Li, Zhang, Olsson and Hafeez would be to alleviate the bad cross-correlation properties of the training sequences (page 1027, right side, first paragraph of Hafeez).

Re claim 56, the claimed limitations recited have been analyzed and rejected with respect to claim 37.

7. Claims 39 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US20020015437), Zhang et al ("Reduced-State MIMO sequence estimation for EDGE systems" Signals, Systems and Computers, 2002. Conference Record of the Thirty-Sixth Asilomar Conference, 3-6 Nov. 2002, Volume 1 page(s): 541- 545) and Olsson et al (US20050111596) in view of Hafeez et al (US6304618).

Re claim 39, the modified invention of Li teaches a method comprising sequentially estimating interfering modulation type and training sequence (¶0043-¶0044 of Olsson, the interferer has a training sequence. Therefore if the modulation type is estimated it would be obvious to estimate the training sequence as well) but fails to teach performing a maximum likelihood joint channel estimate after all modulation types and training sequences are estimated.

Hafeez teaches performing a maximum likelihood joint channel estimate after all modulation types and training sequences are estimated (col. 1 lines 23-29, it would be obvious and well known to perform channel estimation after identification of a signal occurs. The identification and synchronization involve detecting a modulation type and comparing the received training sequence with a known sequence).

Therefore taking the modified teachings of Li, Zhang and Olsson with Hafeez as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of Hafeez into the method of Li, Zhang and Olsson. The motivation to combine Li, Hafeez, Olsson and Zhang would be to reduce the effects of co-channel and inter-symbol interference as well as provide superior performance (col. 1 lines 23-29 of Hafeez).

Re claim 58, the claimed limitations recited have been analyzed and rejected with respect to claim 39.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON-VIET Q. NGUYEN whose telephone number is (571)270-1185. The examiner can normally be reached on Monday-Friday, alternate Friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Q Nguyen/
Examiner, Art Unit 2611

/Chieh M Fan/
Supervisory Patent Examiner, Art Unit 2611